

The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

BOUVERIE HOUSE, 154, FLEET STREET, LONDON, E.C.4

Telegrams: ALLANGAS FLEET LONDON
GLASGOW: 116, Hope Street (Central 3970)

Telephone: CENTRAL 3212 (10 lines)
BIRMINGHAM: Daimler House, Paradise Street (Midland 0784-5)

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Equality of Sacrifice

WE know far less about the first year of Hitler's War than was known at the end of the first year about the Kaiser's similar effort. One of the reasons of our superior strength is, perhaps, the extraordinary willingness of a free people to be content with just as much or as little news and information as authority sees fit to give us. In so far as this is a conscious special war effort at self restraint, it is wholly good, but if any of it can be traced to a weakening of the power to think after twenty years of wireless thinking for us, it is wholly deplorable.

In the Great War we lost time making up our minds to accept conscription; in this one it required less than a couple of hours of Parliamentary time to conscript not only our bodies, but our wealth and everything we have. In August, 1914, we were convinced that we should all be out of work, unemployment threatened—or so we thought. There was an immediate and very general cut in salaries and wages; business prepared itself to close down, instead of, as now, being told to do so. Those were the days when unemployment varied very little round about the half million mark. As unemployment insurance was then in its infancy, we not unnaturally had fewer people out of work, but what unemployment we did have was the real thing. So scared were we at the prospect of a rise in the out-of-works, that a Prince of Wales' Fund, under the chairmanship of Mr. Wedgwood Benn, raised a million pounds in a few days for the relief of distress.

Following the same line of thought, the Local Government Board issued a circular to local authorities urging them to put all possible work in hand to create employment. It was more than a year before our errors were discovered. The Government called for "Business as Usual," an attitude which, on the present occasion, has been completely reversed. We now know that we overdid it in 1914-15, and in due time and season we shall know how far we were wrong in the other direction in 1939-40.

It is none too early, however, to begin to inquire how the 1939-40 theories were applied, how far they succeeded and with what degrees of justice and equity. The general plan was that all peace work should be transformed into war work, and putting the cart before the horse, we proceeded to stop the one before we were ready to start the other. Most of the

professions put up their shutters at once and hundreds of thousands of homes and offices were thrown on the market. Barristers, architects, actors, advertising experts and the like, have not acquired the habits of agitation and demonstration and so a glorious tale of patriotic self-sacrifice remains for the most part untold. The business classes, especially the merchants and the shopkeepers, have a similar story to their credit. On the average they have halved their civilising activities. Very few of our wholly peaceful businesses have fifty per cent. of their man power left to them, for unless there was some small connection with a war effort British manhood has been unwilling to carry on as before. As happens in these things, however, the sacrifice has not been evenly distributed, but the general plan, cheerfully accepted by private enterprise, has been to shut down everything except war work.

In these modern times our ordinary peace work includes not only the operations of private enterprise, but new vast fields of public work. We had reached the height of bureaucratic ambition and were gaily disbursing more than a thousand millions on national and local government services. Have these been subjected to the same pruning process? For example, whole areas have been closed for defence purposes and most of the shops are shut, but has the army of inspectors employed to enforce the mass of legislation, now laid on the shoulders of shopkeepers, been proportionately reduced? Banks and business offices have called back their pensioners so that younger men could be free to join the colours, yet we hear of no such happenings in the official world.

It will not be many weeks before the Chancellor produces yet another budget and there will be the usual outcry from the opponents of private enterprise for a further increase in the Income Tax. These people have a weakness for formulae and percentages, and we venture to suggest another outlet for their genius in those directions. A ten per cent. reduction in our peace-time civil services will be, let us suppose, the equivalent of sixpence on the Income Tax. Nothing would appeal more strongly to our sense of fair play if those two factors were correlated, co-ordinated, brought into some liaison scheme, or treated to one or other of the processes with evil sounding names, of which our bureaucrats are the acknowledged masters.

NOTES AND COMMENTS

More About the "Uranium Menace"

MORE news has come to hand about the "uranium menace," which created a momentary sensation in the daily Press last May, and was referred to in our issue of May 11. The General Electric Research Laboratories in Schenectady, U.S.A., have reported work by K. H. Kingdon and H. C. Pollock whereby they have isolated something in the nature of one hundred-millionth of a gram of the uranium isotope of A.W. 235, using a mass spectrometer of their own design. Prof. A. O. Nier, at the University of Minnesota has prepared similar samples with his spectrometer. Kingdon and Pollock used uranium tetrachloride, which is vaporised at high temperature and passed through a slit where it is bombarded with a beam of electrons. The whole apparatus is held in a magnetic field and, as the voltage accelerating the ions varies, U-235 and other isotopes were collected on platinum plates at the end of a copper tube. The maximum possible yield of mass spectrometers of the type now known would be about one ten-billionth of a pound per hour, indicating that quantities of U-235 sufficient to make possible energy-releasing chain reactions are not yet quite in sight.

Scrap for Victory

IN almost every industrial works up and down the country could probably be found an appreciable quantity of scrap iron and steel, which, more often than not, has been put on one side against the time when a use could be found for it. That time has now arrived. No longer is such discarded metal "scrap" in the pre-war meaning of the word. The nation has a need for it, to help in the "scrap" for freedom. Just how important a part scrap iron and steel can be made to play in the drive for victory is strikingly demonstrated at an exhibition which the Iron and Steel Control has arranged in the booking hall of Charing Cross Underground station. Large photographs show the collection of scrap iron and steel, the various processes through which it then goes and finally the "finished articles," in the shape of guns and tanks for the front line and fire engines and so on for civil defence. Impressive though this pictorial story is, chief attention is attracted by the more live exhibit comprising a two-pounder anti-tank gun, an anti-tank rifle and a Bren machine gun, together with ammunition, surrounded by a pile of scrap metal similar to that from which they emanated. Opening the exhibition in the presence of several representatives of the chemical and other industries on August 15, the Minister of Supply, Mr. Herbert Morrison, said that although large numbers of people had responded magnificently to the new salvage drive, launched last month, not every one was yet playing his proper part. Material which hitherto had been regarded as scrap and waste was essential in the production of the planes that were to be added to the R.A.F. in months to come, the Navy's reinforcements, planned and building, and the ammunition that was being piled up for use in the mighty barrage against Goering's bombers. "Your old iron and steel will win the war," said Mr. Morrison.

Wholesale Prices in July

THE Board of Trade Index Number for wholesale prices in July for industrial materials and manufactures is 142.3 (190 = 100); for chemicals and oils the figure is 118.0; for iron and steel 163.8; for non-ferrous metals

123.8. These figures represent an increase, over the June figures, of 0.3 per cent. for chemicals and oils and of 7.3 per cent. for iron and steel, and a decrease of 0.3 per cent. for non-ferrous metals. In the past year (since July, 1939) the respective increases are 26.5, 26.7 and 25.8 per cent., showing a remarkable uniformity in the rise in cost of the raw materials of the chemical and metallurgical industries. Even more striking is the consistent slow rise in the index figure for chemicals and oils; since the comparatively steep increase in the early war-months, which came to an end in February last, the monthly increment has never been more than 2.0. The non-ferrous metal figure has been well controlled, showing a total increase of only 1.9 (1.56 per cent.) since January, 1940; the slight fall for this month is attributable to the lower average in tin prices. The rise in iron and steel prices, which is considerably steeper than it has been for any inter-monthly period since October-November last, is due to the advance in the controlled prices operative from July 1.

The War and Canadian Industries

WAR affects different industries in different ways. To some it brings a temporary and spurious prosperity insofar as the Government of a country allows profits to be made in war-time; to others it brings temporary collapse. The Monthly Letter of the Royal Bank of Canada reveals that there is marked acceleration of activity in nearly all Canadian industries. There is a gain of 19½ per cent., as compared with the same period in 1939 in the physical volume of business, industrial production being 22 per cent. greater. Pig-iron showed a large increase as was to be expected, being 368,000 tons for the first four months of this year as compared with 186,000 tons for the corresponding months of 1939. Automobile manufacture is greater than in any year since 1937, whilst electric power production, which in highly industrialised countries is always an index of activity has increased from 9165 million units during the first third of 1939 to 9718 million units for the same period of 1940. Naturally the demand for essential war materials has increased the value of imports, as well as of exports so that the value of imports exceeded that of exports for the first time since 1934. It is a curious fact that in spite of the intense activity in all Empire countries, and of the numbers of men absorbed into the Services, there is still unemployment. The Canadian unemployed in March this year numbered 391,000, which was 103,000 less than at the same period last year, and the lowest total since 1931. The figure for unemployed in any country is largely meaningless unless the circumstances under which the unemployment occurs are known. It may be due to the temporary decay or closing of non-essential industries, and to some extent it is due to the difficulty there will always be of finding work for those low on the industrial scale of employability.

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Xanthates in Froth-Flotation Concentration

Some New Developments

by D. D. HOWAT, B.Sc., A.Inst.M.M., A.I.C., Ph.D.

IN the older methods of flotation, filming and collection of the sulphide particles was effected by the use of certain insoluble oils. Two disadvantages associated with the use of these oils were their insufficiently selective power and their insolubility, which, even in the minute quantities used, led to high power-consumption in the cells, for excessive agitation was required to produce uniform dispersion through the ore-pulp. One of the big advances in flotation technique originated from the discovery by Perkins (U.S. Patent 1,304,304, 1921) that various soluble organic compounds produced very efficient collection of sulphide mineral particles. This was followed by Keller's work (U.S. Patent 1,554,216, 1925) on the action of soluble xanthates in the flotation of sulphide minerals. Still later, Whitworth discovered and patented the soluble dithiophosphates, which are generally known as "Aerofloat reagents." These two groups of organic compounds have played a very important part in bringing froth flotation to its present high state of efficiency. The general structural formulae for the two types of reagents are included in the author's previous article on Flotation (CHEMICAL AGE, 42, 1936, p. 343).

The necessary alcohols are combined with carbon disulphide in the manufacture of xanthates and with phosphorus pentasulphide in the manufacture of the dithiophosphates. A larger number of replacement compounds can be formed in the dithiophosphate series and both aliphatic alcohol or phenol groups can be attached to the phosphorus atom. In the xanthates only aliphatic (or straight-chain) groups have been used in the manufacture of the ordinary range of reagents. The differences in structure are really minor in character as both series of reagents are composed of a molecule with a polar/non-polar structure. The polar group constitutes the means by which the collector becomes attached to the mineral particle, and the non-polar group, oriented at the surface, produces a highly water-repellent film around the surface of the particle.

The Collecting Power

The selective power of the various reagents can be varied to a great extent by control of the composition of the various groups, while the collecting power increases with the length of the carbon chain of the non-polar part of the molecule. Professor A. M. Gaudin has formulated a rule that the active collecting power of the xanthates increases with the number of the carbon atoms in the alcohol chain. Increase in the length of the carbon chain leads, however, to decreasing solubility of the resulting xanthates and up to the present it has been found that the maximum collecting powers are reached in xanthates derived from the amyl (5-carbon) alcohols. The range of xanthates available is as follows: Potassium and sodium ethyl xanthates; isopropyl xanthate; butyl xanthate; amyl xanthate; pentasol amyl xanthate; and hexyl xanthate.

The lower-carbon members of the series are rather inactive towards pyrite, being used in differential flotation to effect the collection of lead and zinc sulphides, while leaving pyrite depressed. Their comparative inactivity towards pyrite and pyrrhotite is also exceedingly useful in the treatment of copper ores, where the chalcopyrite is frequently associated with iron sulphides.¹ Butyl xanthate finds application in selective circuits for the separation of various sulphide minerals and in the flotation of precious metal ores, being used to float the gold-bearing sulphides and tellurides in the ore at Wright-Hargreaves mine, Northern Ontario.² Amyl and pentasol xanthates are also employed as collectors for precious metal ores, being useful for minerals which are

resistant to flotation, such as arseno-pyrite, badly and partially oxidised pyrite and pyrrhotite. Mixed with other of the lower carbon series they are also used in the flotation of various complex sulphide ores.

The xanthates also appear to be possessed of high flocculating powers. In the body of the pulp agglomerates of numerous sulphide particles are formed, and, as these become attached to the air-bubbles, greater quantities are lifted by the froth leading to increased capacity of the machines.

Examples of the uses of xanthates in some new and quite interesting developments in the flotation treatment of ores have been published recently and a brief account of some of these advances is now given.

New Line of Attack

Prof. W. E. Keck and his co-workers at the Michigan College of Mining and Technology, Houghton, Mich., have been investigating a new line of attack on the problems of floating minerals and oxidised materials.³ The first tests, carried out were concerned with the removal of pyrite from a high-sulphur iron ore. The obvious course of action was to float off the pyrite, leaving a tailing in which was the minimum quantity of sulphur and the maximum of iron. The reagents tested initially were the ordinary ethyl and amyl xanthates, but later the use of ethyl xanthate in conjunction with sodium oleate gave better results. In a tailing, in which 90 per cent. of the iron was recovered, the sulphur content was reduced to 0.15 per cent., only 0.05 lb. of oleate and 0.10 lb. of xanthate being required per ton of ore treated.

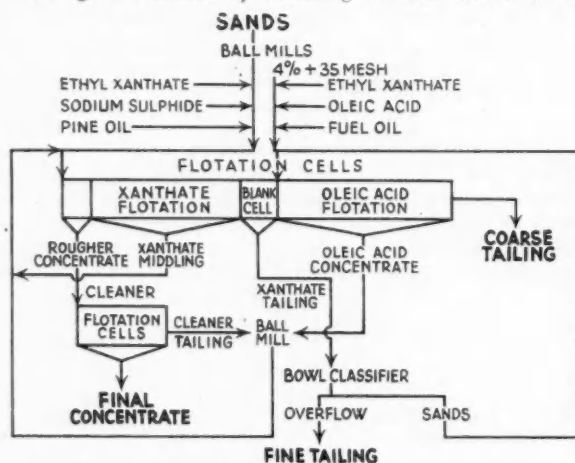
This combination of reagents was then applied to the treatment of a weathered amygdaloidal copper tailing and an oxidised gold ore. In the treatment of the native copper ores in the copper country of Michigan considerable quantities of tailings have been accumulated in dumps partly submerged in Lake Superior or connected lakes. The residual native copper in the tailings, oxidised to a greater or lesser extent depending upon the degree of submergence, occurred in association with lime and iron-bearing minerals. Preliminary tests showed that these sand tailings were not easily floatable and that no satisfactory recovery of the copper could be made except after grinding to a degree of fineness that would be quite uneconomic in relation to the yield of metal.

Exhaustive experiments were then carried out on the sands, using this combination of xanthate and sodium oleate. The sands were coarsely ground to minus 35 mesh and split into two fractions by a 200-mesh screen. Only material larger than 200 mesh was treated, the finer fraction not being amenable to the action of the oleates. Quite successful recovery of the copper was obtained, but it was found that higher recoveries were possible if oleic acid and soda ash were used instead of sodium oleate, and that the quantities of these reagents required could be considerably reduced if a quantity of fuel oil were added. Finally, the process was tested on a 350-ton per day unit in one of the mills in the district. The flow-sheet for the treatment adopted is as shown on page 90.

It will be noted that initially only a rough grind of the material is required, the first concentrate being formed by flotation after the addition of xanthate, sodium sulphide and pine oil. The tailing from the first-stage flotation is separated into sands and slimes by a bowl classifier, the sands, which average plus 150 mesh, forming the feed to the second-stage flotation treatment. At this point crude oleic acid and fuel oil are added. The low-grade concentrate produced is re-ground in a ball mill and returned to the first-stage flotation section. The quantities of reagents used are as follows, all expressed in lb. per ton: ethyl xanthate, 0.15; sodium

sulphide, 0.16; oleic acid, 0.07; fuel oil, 0.15; and pine oil, 0.09. The copper content of the various products is as follows, in percentages: rougher concentrate, 16.8; cleaner concentrate, 36.8; oleic acid concentrate, 2.0; fine tailing, 0.19; coarse tailing 0.09; average final tailing 0.10. As a result of this treatment the recovery of copper was increased by 1½ lb. per ton over the previous results while the cost of the additional reagents was 1½ cents per ton treated.

Microscopic examination of the oleic acid concentrate revealed that it was composed of small quantities of very coarse oxidised copper and large quantities of calcite, prehnite and epidote, containing unliberated copper. The explanation of the action of the combination of the reagents is therefore quite simple. The particles of concentrate in the first stage are floated by becoming covered with a water-



Flow-sheet of Xanthate-Oleate flotation for copper ores.

repellent film of adsorbed xanthate. In the second stage such a complete film of xanthate is not formed round the heavily oxidised copper, but what traces of such film as do exist are reinforced and covered over with a film of oleic acid and highly water-repellent fuel oil. The action becomes even more pronounced in the case of the calcite particles associated with small traces of copper, it being well known that oleic acid is readily adsorbed on that mineral.¹ Also included in the concentrate were some small particles of copper-containing quartz, and it is at least a possibility that the small particles of copper exposed on the surface of the quartz acted as nuclei from which proceeded the filming of the complete particles by oleic acid and fuel oil.

The method was also tried out on a badly oxidised gold ore, in which the gold occurred free and in association with badly oxidised pyrite and with iron and manganese oxides. The gold recovery was increased from 74 to 86 per cent.

Additional research by the same investigators¹ showed that mohogany soap could be used in place of oleic acid, the substituted reagent not giving rise to the excessive frothing in the presence of slimes which had been the feature of the use of oleic acid. The active constituent of this soap, which is a by-product of petroleum refining, is a sodium salt of sulphonic acid. Calcite, hematite and epidote, when carrying quantities of valuable minerals, were easily floated by this reagent. In a series of tests carried out with mohogany soap, copper sulphide ores were treated with very good results, an additional pound of copper being recovered for an expenditure of 1½ cents for reagents.

The important factors in this new method of treatment are as follows: (a) only a rough grind, say, minus 35 mesh, is necessary, so giving rise to considerable saving in grinding costs; (b) from the rougher flotation section a concentrate is made which can be cleaned and recleaned; (c) the tailings from the xanthate flotation are floated by means of a mixture of fuel oil and oleic acid or mohogany soap, so producing a low-grade concentrate, or middling; (d) only this material

need be reground to the fineness necessary to liberate the mineral, the finely ground pulp being fed back to the xanthate flotation section for recleaning.

The success of the process lies in the possibility of floating, by this combination of collecting reagents, ore particles associated with varying, sometimes quite small, quantities of valuable mineral. Fine grinding need only be carried out on this fraction and a considerable saving in grinding and an increased recovery of valuable mineral are effected.

Another interesting example of the use of xanthates in a new development in flotation is reported from the Juneau mill of the Alaska-Juneau Gold Mining Company.² Large tonnages of a low-grade gold ore, assaying less than 2½ dwts. per ton, are treated by fine-grinding followed by de-watering in V-tanks. The thickened underflow from the tanks forms the feed to the concentrating section, while the overflow consists of low-grade low-gravity slimes, assaying 0.42 dwts. per ton and 0.04 to 0.07 per cent. lead. In the original flow-sheet, flotation treatment of the slimes gave a concentrate of 6 oz. of gold and 15 per cent. lead, and the tailing discharged to waste averaged 0.17 dwts. per ton. The ore contains pyrite and carbonaceous material, soluble starch being used as a depressant for these minerals in the flotation circuit.

At one point it was noted that an addition of soluble starch, greater than the critical amount required, broke down the froth to such an extent that the production of concentrate ceased for a time. When froth eventually reformed, the first concentrate taken off was of very high grade, at least 8 to 10 times better than normal, the grade falling off gradually as the cells resumed normal operation. After some study, attempts were made to regulate and control the production of concentrate into timed periods. A cycle of three equal periods was adopted. In the first of these starch is added in excess, breaking down the froth to such an extent that no concentrate is produced either during this or the next period, while during the third period the accumulated concentrate is allowed to discharge. The average length of the cycle is 30 minutes.

Ratio of Concentration Increased

By this treatment the ratio of concentration has been increased from 380 into 1 to 1600 into 1, depression of pyrite, pyrrhotite, and carbonaceous material being practically complete. About 2000 tons of slimes are treated per day, the grade of concentrate having risen from 6 oz. to 40 or 50 oz. per ton and the lead from 15 to 60 per cent. The value of the tailings has remained apparently consistently at 0.17 dwts. per ton. Amyl xanthate is used as the collector in this new and interesting experiment in intermittent froth flotation.

A novel development in the design of air-lift cells is found in the Holden mill of the Howe Sound Company, at Holden, Washington.³ The ore, containing gold, chalcopryite, pyrite, and pyrrhotite, is ground to 60 per cent. minus 200 mesh and treated in matless air-lift flotation cells. The pulp is maintained at 9.0 to 9.5 pH value by the addition of lime, while cyanide helps to depress the iron sulphides. Pentasol xanthate (0.04 lb. per ton) is used as the collector, as it increases the floatability of the rather refractory free-gold particles and is inactive towards pyrite. A novel feature of the flotation cells is the increase in depth over the usual pattern, the cells being 10 ft. deep in contrast with the normal 2 ft. 6 in. These cells are claimed to be more efficient than the usual pneumatic or mechanically operated type. They afford more effective aeration of the pulp, thereby assisting flotation of the free particles of badly tarnished gold, which float slowly and can only be recovered by doubling the time of treatment required for the recovery of the copper minerals.

REFERENCES

- ¹Kirchner, Bean and White. Eng. & Min. J. 138, 11, p. 29 (1937).
- ²Black. Eng. & Min. J., 140, 4, 37 (1939).
- ³Keck, Jasberg and Schnauffer. Eng. & Min. J., 139, 3, 33 (1938).
- ⁴Keck and Jasberg. Eng. & Min. J., 140, 6, 49 (1939).
- ⁵Coke. Eng. & Min. J., 140, 9, 33 (1939).
- ⁶Pearse and Zanadrovoff. Eng. & Min. J., 140, 11, 31 (1939).

General News

THE INSTITUTION OF CHEMICAL ENGINEERS has decided to lend £2000 to the Government free of interest for the duration of the war.

THE ANNUAL MEETING of members of the North of England Institute of Mining and Mechanical Engineers will be held in the Lecture Hall of the Institute, Newcastle-on-Tyne, at 2.30 p.m. to-day, August 24.

ALL THE MEN OF THE DARTMOOR VILLAGE of Lea Moor who lost their employment when the china clay pits in which they had worked all their lives closed down some time ago, have since found other work at Devonport.

A MEMORANDUM concerning the use of sulphonamide derivatives has been issued by the War Office. It supersedes all previous memoranda on this subject and has been extended to include the treatment of the commoner infections known to respond to this group of drugs. Copies are obtainable from H.M. Stationery Office, price 2d. each.

COPIES OF British Standard Specification for Pressure Creosoting of Timber (B.S. No. 913), which covers the methods of pressure creosoting usually employed in this country and gives minimum absorption figures for effective treatment over a wide range of timbers, may be had from the British Standards Institution, 28 Victoria Street, London, S.W.1, price 2s. 3d. post free.

SOAP AND CANDLE TRADES WORKERS are to receive, under a Joint Industrial Council award, a war allowance of four shillings per week for adult males and two shillings per week for adult females, with proportionate advances for juniors, as from the first pay day in September. The allowances will not apply to overtime, piecework, or night rates. About 25,000 workers will benefit by the award.

IN THE COURSE OF HIS SPEECH at the thirty-first ordinary general meeting of the Anglo-Iranian Oil Company, Ltd., at the Chartered Insurance Institute, Aldermanbury, E.C., on August 20, the chairman, Lord Cadman, stated: "... The trading profits earned during the year are sufficient to have enabled a small dividend to be paid, but I am sure that stockholders will agree that in times like the present it is essential to conserve the resources of the company."

DR. GERARD C. SAVOY, of Lausanne, has produced a preparation which is claimed to be the most efficient known antidote to yperite (mustard gas). After the preparation has been applied on the affected part, it is stated, fifty per cent. of the yperite present in the wound is destroyed after an hour and 100 per cent. after ten hours. In a few hours, all that can be seen on the skin is some spots, which quickly heal. The preparation is being produced in large quantities for public use.

WITH CERTAIN EXCEPTIONS, all manufacturers, and dealers by wholesale in, goods chargeable with Purchase Tax, are required to register for Purchase Tax purposes. Full particulars are given in Notice No. 74, copies of which are obtainable from any Customs and Excise Office. For the present, firms not required to register are those whose gross takings from sales of chargeable goods (excluding in the case of a manufacturing retailer any retail sales of goods not made by him) do not on the average exceed £2,000 a year.

THE SECOND OF THE Air Raid Precautions Training Bulletins which the Ministry of Home Security is issuing, is now available at the Stationery Office, price 6d. or 8d. including postage. These Bulletins are issued for the benefit of instructors, and more particularly those in commercial and industrial establishments who have not the same opportunities for keeping in touch with the latest developments in A.R.P. matters as have local authorities' staffs. The Bulletins contain all the latest information and doctrine on all A.R.P. subjects. A standing order may be placed with the Stationery Office for the further Bulletins which will be issued from time to time.

Foreign News

THE FIRST SHIPMENT OF MERCURY, totalling 400 flasks, has been made from a mine in British Columbia. The mine started production on June 10, and the shipment represents one month's output, so that the mine may eventually produce sufficient mercury to cover Canada's entire requirements. This output is nearly four times the previous production of the whole of British Columbia. In 1939, Canada imported 1437 flasks of mercury.

From Week to Week

CANADIAN EXPORTS OF ARSENIC for 1939 were 906,300 lb. (value \$26,369) against 378,300 lb. in 1938 (\$32,519).

OF THE TOTAL IMPORTS of china clay into the U.S.A. in 1939, amounting to 114,696 short tons, 112,859 short tons came from the United Kingdom, according to a preliminary report in *The Ceramic Age* (Newark, N.J.). In value, the U.K. share was \$992,582 out of a total of \$1,015,813.

TO CONSERVE SUPPLIES in Germany of certain medicinal materials normally obtained through imports, German trade control authorities have issued instructions restricting shop sales, encouraging the use of substitutes in manufacturing processes, and authorising deviations from the German pharmacopoeia. Boric acid and iodine are among the items affected, according to a U.S. Consular report from Frankfurt.

CONSULAR REPORTS FROM EGYPT, published by *World Trade Notes*, indicate that efforts are being made to exploit the iron oxide deposits in the Aswan district, which recent research has shown to contain about 53 per cent. of iron. The Egyptian Ministry of Commerce and Industry is looking for new concerns with sufficient capital to undertake the development. At the same time expansion is heralded for the one Egyptian factory (in Alexandria) producing crude glycerine. The yearly output has increased from 136 metric tons in 1938 to 250 in 1939, and the firm concerned expects to reach a quota of 600 tons per annum within the next two years.

Personal Notes

The Council of the City and Guilds of London Institute have conferred the distinction of Fellow of the Institute (F.C.G.I.) upon Mr. H. C. ARMSTRONG, Dr. C. H. DESCH, F.R.S., Dr. A. P. M. FLEMING, C.B.E., and Dr. S. L. SMITH.

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SECOND-LIEUTENANT W. A. BIGGAR, Royal Corps of Signals, who was reported missing in June, and is now a prisoner of war, was on the staff of the Rowett Research Station, Aberdeen, before joining the Army.

* * * *

MR. ALEXANDER BAIRD, Larbert, secretary, Ironfounding Workers' Association (Northern District) for 22 years, has retired, and has been presented with a clock, the gift of representatives, delegates and members of the committee.

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SECOND-LIEUT. G. E. CARSON, whose home until recently was at Runcorn and who, prior to the outbreak of war, was in an executive position with Imperial Chemical Industries, has been promoted to the rank of Captain.

* * * *

The name of Mr. J. GLEAVE, an analytical chemist at the Wigg Works, Runcorn, of Imperial Chemical Industries, Ltd., is included in the pass list recently issued by the University of London for the 1940 B.Sc. examination for external students.

* * * *

MR. E. J. HEMER, of Peverell, Plymouth, formerly a student at the University College of the South West, Exeter, who at the age of 22 has been awarded the B.Sc. (Lond.) degree in chemistry with first class honours, has taken up an appointment with Imperial Chemical Industries at Huddersfield.

OBITUARY

MR. ISSAC STACEY, of Widnes, who retired in 1939 after 55 years' service with the Gaskell-Deacon Chemical Works, Widnes, has died at the age of 79.

* * * *

MR. ROBERT SLATER, senior engineer of the Overseas Oil Transport Co., whose home was at South Shields, has died suddenly at Methil, aged 65.

* * * *

MR. JOSEPH LEE HOWARTH, head of the firm of Messrs. Jno. T. Howarth, Deighton Chemical Works, near Huddersfield, who has died in a nursing home at Manchester, aged 64, had controlled the undertaking since 1903.

Weekly Prices of British Chemical Products

THE price position in the general chemical market shows very little change and quotations throughout are steady at recent levels. The volume of inquiry for both home and export has been satisfactory, actual bookings pending largely on the availability of supplies. Most of the heavy acids are in good request and a fair interest is displayed in acetone, formaldehyde and most of the soda compounds. The lead oxides are steady, with the convention scale of quotations unchanged. Trade in coal tar products in the aggregate has been on a small scale this week, all sections reporting a very limited inquiry. Cresylic acid, pyridine and pitch are dull markets, the quotations for the latter item nominal.

MANCHESTER.—Generally firm price conditions has been reported on the Manchester chemical market during the past week and signs of easiness are rarely in evidence. Most of the soda compounds and heavy acids are attracting fair attention so far as contract deliveries are concerned, whilst a continued scarcity of offers of most descriptions of potash materials and also of oxalic and tartaric and citric acids is reported. Fresh inquiry has been moder-

ate. Some easiness is apparent still in one or two sections of the by-products market, but a steady trade is passing in most of the light materials.

GLASGOW.—This week the Scottish heavy chemical trade has nothing fresh to report. Prices are normal with demand steady and the main variation in value appears to be the scarcity of immediate supplies of potassium—carbonate and caustic. However, it is expected that suitable substitutes will be used, and so relieve the potash for really essential and war purposes.

Price Changes

Rises: Calcium Acetate, grey (Manchester), Sodium Sulphate (Manchester), Tartaric Acid (Manchester), Wood Creosote.

General Chemicals

Acetic Acid.—Maximum prices per ton: 80% technical, 1 ton £36 10s.; 10 cwt./1 ton, £37 10s.; 4/10 cwt., £38 10s.; 80% pure, 1 ton, £38 10s.; 10 cwt./1 ton, £39 10s.; 4/10 cwt., £40 10s.; commercial glacial, 1 ton, £46; 10 cwt./1 ton, £47; 4/10 cwt., £48; delivered buyers' premises in returnable barrels. £4 per ton extra if packed and delivered in glass.

Acetone.—Maximum prices per ton, 50 tons and over, £52 10s.; 10/50 tons, £53; 5/10 tons, £53 10s.; 1/5 tons, £54; single drums, £55, delivered buyers' premises in returnable drums or other containers having a capacity of not less than 45 gallons each; delivered in containers of less than 45 gallons but not less than 10 gallons £10 10s. per ton in excess of maximum prices; delivered in containers less than 10 gallons each £10 10s. per ton in excess of maximum prices, plus a reasonable allowance.

Alum.—Loose lump, £9 10s. per ton, d/d, nominal.

Aluminium Sulphate.—About £9 10s. per ton d/d.

Ammonia Anhydrous.—99.95%, 1s. to 2s. per lb., according to quantity in loaned cylinders, carriage paid; less for important contracts.

Ammonium Carbonate.—£32-£36 per ton d/d in 5 cwt. casks.

Ammonium Chloride.—Grey galvanising, £18 per ton, in casks, ex wharf. See also Sal ammoniac.

Antimony Oxide.—£68 per ton.

Arsenic.—99/100%, about £30 per ton, ex store.

Barium Chloride.—98/100%, prime white crystals, £11 10s. 0d. to £13 per ton, bag packing, ex works; imported material would be dearer.

Bleaching Powder.—Spot, 35/37%, £10 per ton in casks, special terms for contract.

Borax, Commercial.—Granulated, £23; crystals, £24; powdered, £24 10s.; extra fine powder, £25 10s.; B.P. crystals, £32; powdered, £32 10s.; extra fine, £33 10s. per ton for ton lots, in free 1 cwt. bags, carriage paid in Great Britain. Borax Glass, lump, £68; powder, £69 per ton in tin-lined cases for home trade only, packages free, carriage paid in Great Britain.

Boric Acid.—Commercial, granulated, £37 10s.; crystals, £38 10s.; powdered, £39 10s.; extra fine, £41 10s.; large flakes, £50; B.P. crystals, £46 10s.; powdered, £47 10s.; extra fine powdered, £49 10s. per ton for ton lots in free 1-cwt. bags, carriage paid in Great Britain.

Calcium Bisulphite.—£6 10s. to £7 10s. per ton f.o.r. London.

Calcium Chloride.—70/75% solid, £5 11s. per ton ex store.

Charcoal Lump.—£10 10s. to £14 per ton, ex wharf. Granulated, supplies scarce.

Chlorine, Liquid.—£19 15s. per ton, d/d in 16/17 cwt. drums (3-drum lots); 4½d. per lb. d/d station in single 70-lb. cylinders.

Chrometan.—Crystals, 4½d. per lb.; liquor, £19 10s. per ton d/d station in drums. GLASGOW: Crystals 4d. per lb. in original barrels.

Chromic Acid.—1s. 2d. per lb., less 2½%; d/d U.K. GLASGOW: 1s. 0½d. per lb. for 1 cwt. lots.

Citric Acid.—1s. 2d. per lb. MANCHESTER: 1s. 5½d.

Copper Sulphate.—About £30 per ton d/d.

Cream of Tartar.—100%, £7 7s. per cwt., less 2½%, d/d in sellers' returnable casks; imported material would be dearer.

Formic Acid.—85%, £44 10s. per ton for ton lots, carriage paid, carboys returnable; smaller parcels quoted at 46s. 6d. to 49s. 6d. per cwt., ex store.

Glycerine.—Chemically pure, double distilled, 1,260 s.g., in tins, £3 10s. to £4 10s. per cwt. according to quantity; in drums, £3 2s. 6d. to £3 16s. 0d. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

Hexamine.—Technical grade for commercial purposes, 1s. 4d. per lb.; free-running crystals are quoted at 1s. 7½d. to 1s. 10½d. per lb.; carriage paid for bulk lots.

Hydrochloric Acid.—Spot, 6s. 1½d. to 8s. 7½d. carboy d/d according to purity, strength and locality.

Iodine.—Resublimed B.P., 9s. 2d. to 13s. per lb., according to quantity.

Lactic Acid.—Dark tech., 50% by vol., £33 per ton; 50% by weight, £38; 80% by weight, £67; pale tech., 50% by vol., £39 10s.; 50% by weight, £46, 80% by weight, £74. Not less than one ton lots ex works; barrels returnable, carriage paid.

Lead Acetate.—White, £48 to £50, ton lots.

Lead Nitrate.—About £44 per ton d/d in casks.

Lead, Red.—English, 5/10 cwt. £42; 10 cwt. to 1 ton, £41 15s.; 1/2 tons, £41 10s.; 2/5 tons, £41; 5/20 tons, £40 10s.; 20/100 tons, £40; over 100 tons, £39 10s. per ton, less 2½ per cent. carriage paid; non-setting red lead 10s. per ton dearer in each case. Continental material £1 per ton cheaper.

Lead, White.—Dry English, less than 5 tons, £51 10s.; 5/15 tons, £47 10s.; 15/25 tons, £47; 25/50 tons, £46 10s.; 50/200 tons, £46 per ton less 5 per cent. carriage paid; Continental material £1 per ton cheaper; ground in oil, English, 1/5 cwt., £60; 5/10 cwt., £59; 10 cwt. to 1 ton, £58 10s.; 1/2 tons, £57; 2/5 tons, £56; 5/10 tons, £54; 10/15 tons, £53; 15/25 tons, £52 10s.; 25/50 tons, £52; 50/100 tons, £51 10s. per ton less 5 per cent. carriage paid. Continental material £2 per ton cheaper.

Litharge.—1 to 2 tons, £41 per ton.

Lithium Carbonate.—7s. per lb. net.

Magnesite.—Calcined, in bags, ex works, about £12 to £15 per ton.

Magnesium Chloride.—Solid (ex wharf), £12 to £13 5s. per ton.

Magnesium Sulphate.—Commercial, £12 to £14 per ton, according to quality, ex works.

Mercury Products.—Controlled price for 1 cwt. quantities: Bichloride powder, 12s. 3d.; bichloride lump, 12s. 10d.; ammon. chloride powder, 14s. 2d.; ammon. chloride lump, 14s.; mercurous chloride, 14s. 7d.; mercury oxide, red cryst., B.P., 16s. 4d.; red levig. B.P., 15s. 10d.; yellow levig. B.P., 15s. 9d.

Methylated Spirit.—Industrial 66 O.P. 100 gals., 2s. 0½d. per gal.; pyridinised 64 O.P. 100 gals., 2s. 1½d. per gal.

Nitric Acid.—S.G. 1420, £28 10s. to £30 per ton ex works.

Oxalic Acid.—From £60 per ton for ton lots, carriage paid, in 5-cwt. casks; smaller parcels would be dearer; deliveries slow.

Paraffin Wax.—Nominal.

Potash, Caustic.—Nominal.

Potassium Bichromate.—Crystals and granular 6d. per lb.; ground, 7d. per lb., carriage paid.

Potassium Carbonate.—Nominal.

Potassium Chlorate.—Imported powder and crystals, ex store London, 10d. to 1s. per lb.

Potassium Iodide.—B.P., 8s. to 11s. 2d. per lb., according to quantity.

Potassium Nitrate.—Small granular crystals, £26 to £29 per ton ex store, according to quantity.

Potassium Permanganate.—B.P., 1s. 4½d. to 1s. 5½d. per lb.; commercial, £7 9s. 6d. to £8 1s. 6d. per cwt., according to quantity d/d.

Potassium Prussiate.—Yellow, about 1s. 2d. to 1s. 5d. per lb., supplies scarce.

Salammoniac.—Dog-tooth crystals, £50 per ton; medium, £48 10s. per ton; fine white crystals, £16 10s. per ton, in casks, ex store.

Soda, Caustic.—Solid, 76/77%, spot, £14 10s. per ton d/d station.

Soda Crystals.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

Sodium Acetate.—£37 to £40 per ton, ex wharf.

Sodium Bicarbonate.—About £10 10s. to £11 10s. per ton, in bags.

Sodium Bichromate.—Crystals, cake and powder, 5d. per lb., anhydrous, 6d. per lb. net d/d U.K. GLASGOW: 5½d. per lb., carriage paid.

Sodium Bisulphite Powder.—60/62%, £16 per ton d/d in 2-ton lots for home trade.

Sodium Carbonate Monohydrate.—£20 per ton d/d in minimum ton lots in 2 cwt free bags.

Sodium Chlorate.—£41 to £43 per ton, d/d, according to quantity.

Sodium Hyposulphite.—Pea crystals, £17 15s. per ton for 2-ton lots; commercial, £13 10s. per ton. MANCHESTER: Commercial, £13 10s.; photographic, £17 10s.

Sodium Iodide.—B.P., for not less than 28 lb., 8s. 10d. per lb.; for not less than 7 lb., 10s. 9d. per lb.

Sodium Metasilicate.—£14 5s. per ton, d/d U.K. in cwt. bags.

Sodium Nitrate.—Refined, £9 10s. to £10 per ton for 6-ton lots d/d.

Sodium Nitrite.—£18 15s. per ton for ton lots.

Sodium Perborate.—10%, £4 10s. per cwt. d/d in 1-cwt. drums.

Sodium Phosphate.—Di-sodium, £17 per ton, delivered, for ton lots. Tri-sodium, £20 to £21 per ton d/d for ton lots.

Sodium Prussiate.—From 6d. per lb. ex store.

Sodium Silicate.—£8 2s. 6d. per ton, for 4-ton lots.

Sodium Sulphate (Glauber Salts).—£4 10s. per ton d/d.

Sodium Sulphate (Salt Cake).—Unground, Spot £4 3s. 6d. per ton d/d station in bulk. MANCHESTER: £4 5s.

Sodium Sulphide.—Solid 60/62%, Spot, £13 15s. per ton d/d in drums; crystals, 30/32%, £9 10s. per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62 per cent., £13 10s.; crystals, £9 15s.

Sodium Sulphite.—Pea crystals, spot, £16 per ton d/d station in kegs; commercial, £11 per ton d/d station in bags.

Sulphur Precip.—B.P., £65 per ton.

Sulphuric Acid.—168° Tw., £6 2s. 3d. to £6 13s. 3d. per ton; 140° Tw., arsenic-free, £4 7s. 6d. to £4 17s. 6d. per ton; 140° Tw. arsenious, £4 per ton; quotations naked at sellers' works.

Tartaric Acid.—2s. 0½d. per lb., less 5%, carriage paid for lots of 5 cwt. and upwards. Makers' prices nominal; imported material 2s. 3d. to 2s. 6d. per lb., ex wharf. MANCHESTER: 2s. 3d. per lb.

Zinc Oxide.—Maximum prices: White seal, £30 17s. 6d. per ton; red seal, £28 7s. 6d. d/d; green seal, £29 17s. 6d. d/d buyers' premises.

Zinc Sulphate.—Tech., about £25, carriage paid, casks free.

Rubber Chemicals

Antimony Sulphide.—Golden, 9½d. to 1s. 6d. per lb., according to quality. Crimson, 1s. 10d. to 2s. per lb.

Arsenic Sulphide.—Yellow, 1s. 9½d. per lb.

Barytes.—Imported material £10 to £12 per ton according to quality.

Cadmium Sulphide.—6s. 6d. per lb.

Carbon Black.—5d. to 7½d. per lb., according to quantity.

Carbon Bisulphide.—£32 5s. to £37 5s. per ton, according to quantity, in free returnable drums.

Carbon Tetrachloride.—£46 to £49 per ton.

Chromium Oxide.—Green, 1s. 6d. per lb.

India-rubber Substitutes.—White, 5½d. to 8½d. per lb.; dark 5½d. to 6d. per lb.

Lithopone.—30%, £18 17s. 6d. per ton; 60%, £31 to £32 per ton. Imported material would be dearer.

Mineral Black.—£10 to £14 per ton.

Mineral Rubber, "Rupron."—£16 per ton.

Sulphur.—Finely powdered, about £16 10s. per ton, delivered.

Sulphur Chloride.—7d. per lb.

Vegetable Lamp Black.—£30 to £55 per ton, d/d, according to quality.

Vermilion.—Pale or deep, 13s. 9d. per lb., for cwt. lots.
Plus 5% War Charge.

Nitrogen Fertilisers

Ammonium Phosphate Fertilisers.—£14 11s. 9d. to £19 19s. 6d. per ton in 6-ton lots, September delivery, with a rebate of 1s. 6d. per ton for August delivery, and 3s. per ton for July delivery, d/d farmer's nearest station.

Ammonium Sulphate.—£9 13s. 0d. per ton in 6-ton lots, September delivery, with a rebate of 1s. 6d. per ton for August delivery and with a rebate of 3s. per ton for July delivery, d/d farmer's nearest station.

Calcium Cyanamide.—£21 per ton, c.i.f., on 21 per cent. basis; supplies small.

Concentrated Complete Fertilisers.—£14 13s. 9d. to £14 19s. 3d. per ton in 6-ton lots, September delivery, with a rebate of 1s. 6d. per ton for August delivery and 3s. per ton for July delivery, d/d farmer's nearest station.

"Nitro-Chalk."—£9 14s. 0d. per ton in 6-ton lots, d/d farmer's nearest station, July/September delivery.

Coal Tar Products

Benzol.—Industrial (containing less than 2% of toluol), 2s. to 2s. 1d. per gal., ex works.

Carbolic Acid.—Crystals, 9½d. to 10½d. per lb.; Crude, 60's 3s. 6d. to 4s., according to specification. MANCHESTER: Crystals, 10½d. per lb., d/d; crude, 4s. to 4s. 3d. naked, at works.

Creosote.—Home trade, 5½d. to 6d. per gal., f.o.r., makers' works; exports 6d. to 6½d. per gal., according to grade. MANCHESTER: 5d. to 7d. per gal.

Cresylic Acid.—99/100%, 2s. 4d. to 3s. per gal., according to specification. MANCHESTER: Pale, 99/100%, 2s. 6d.

Naphtha.—Solvent, 90/160°, 1s. 10d. to 2s. per gal.; solvent, 95/160°, 1s. 11d. to 2s., naked at works. MANCHESTER: 90/160° 1s. 11d. to 2s. per gal.

Naphthalene.—Crude, whizzed or hot pressed, £10 to £11 per ton; purified crystals, £26 per ton in 2-cwt. bags; flaked, £27 per ton. Fire-lighter quality, £6 to £7 per ton ex works. MANCHESTER: Refined, £28.

Pitch.—Medium, soft, 50s. per ton f.o.b. MANCHESTER. 50s. (nominal), f.o.b. East Coast.

Pyridine.—90/140°, 20s. to 25s. per gal.; 90/160°, 18s. 6d. to 19s.; 90/180°, 4s. to 5s. per gal., f.o.b. MANCHESTER: 18s. to 21s. 6d. per gal.

Toluol.—Pure, 2s. 5d., nominal. MANCHESTER: Pure, 2s. 5d. per gal., naked.

Xylol.—Commercial, 2s. 9d. per gal.; pure, 2s. 11d. MANCHESTER: 2s. 11d. per gal.

Wood Distillation Products

Calcium Acetate.—Brown, £8 10s. to £10 per ton; grey, £13 to £14. MANCHESTER: Grey, £20.

Methyl Acetone.—40.50%, £42-£45 per ton.

Wood Creosote.—Unrefined, 2s. per gal., according to boiling range.

Wood Naphtha, Miscible.—4s. 6d. to 5s. per gal.; solvent, 1s. 6d. to 5s. per gal.

Wood Tar.—£5 to £6 per ton, according to quality.

Intermediates and Dyes (Prices Nominal)

m-Cresol 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.

o-Cresol 30/31° C.—8d. to 9d. per lb. in ton lots.

p-Cresol 34/35° C.—1s. 8d. to 1s. 9d. per lb. in ton lots.

Dichloraniline.—2s. 8½d. per lb.

Dinitrobenzene.—8d. per lb.

Dinitrotoluene.—48/50° C., 9½d. per lb.; 66/68° C., 1s.

p-Nitraniline.—2s. 5d. per lb.

Nitrobenzene.—Spot, 5½d. per lb., in 90-gal. drums, drums extra. 1-ton lots d/d buyer's works.

Nitronaphthalene.—1s. 2d. per lb.; P.G., 1s. 0½d. per lb.

o-Toluidine.—1s. per lb., in 8/10 cwt. drums, drums extra.

p-Toluidine.—2s. 2d. per lb., in casks.

m-Xyldine Acetate.—4s. 5d. per lb., 100%.

Latest Oil Prices

LONDON.—August 20.—For the period ending August 31 per ton, net, naked, ex mill, works or refinery, and subject to additional charges according to package and location of supplies:—
LANSSED OIL, raw, £14. RAPESEED OIL, crude, £14 5s. COTTONSEED OIL, crude, £31 2s. 6d.; washed, £34 5s.; refined edible, £35 12s. 6d.; refined deodorised, £36 10s. SOYA BEAN OIL, crude, £33; refined deodorised, £37. COCONUT OIL, crude, £28 2s. 6d.; refined deodorised, £31 7s. 6d. PALM KERNEL OIL, crude, £27 10s.; refined deodorised, £30 15s. PALM OIL, refined deodorised, £33. GROUNDNUT OIL, crude, £35 10s.; refined deodorised, £40. WHALE OIL, crude hardened, 42 deg., £30 10s.; refined hardened, 42 deg., £33. ACID OILS.—Groundnut, £19; soya, £17; coconut and palm kernel, £22 10s. ROSIN, 25s. to 30s. per cwt., ex wharf, according to grade. TURPENTINE, 54s. per cwt., spot, American, including tax, ex wharf, barrels, and ex discount.
HULL.—August 20.—American turpentine, spot, 54s. per cwt. in barrels, ex store.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

AIMEE LLOYD AND CO. (1933), LTD., London, W.C., soap manufacturers. (M., 24/8/40.) August 7, £1033 9s. 10d. debentures; general charge. *Nil. July 3, 1939.

SOUTHERN SILICA, LTD., Melksham. (M.24/8/40.) August 9, £500 debentures, part of a series already registered. *£12,350 debentures. £3,916 bankers. Feb. 7, 1940.

County Court Judgments

STRANGE, EDWARD HALFORD, Research Laboratories, Old Park Road, St. Lawrence, Ventnor, technical research chemists. (C.C.J., 27/8/40.) £21 8s. 4d. June 19.

CHARLES AND FOX (sued as a firm), Cavendish Works, Uxbridge Road, Hillingdon, Uxbridge, chemical manganese, putty and Mirbane oil merchants. (C.C.J., 27/8/40.) £14 11s. 8d. July 4.

ZEMS, LTD., R/O, 48 Cannon Street, E.C., manufacturing chemists. £11 8s. 10d. June 27.

Private Meeting

(Inclusion under this heading does not necessarily imply failure. Many private meetings are called in order that the debtor may consult his creditors as to his position, without any suggestion of insolvency.)

THE BUELL COMBUSTION CO., LTD. (P.M., 24/8/40.) Meeting of creditors at 49 Moorgate, London, E.C.2 on Thursday, August 22, 1940, at 11.30 a.m.

Companies Winding-Up Voluntarily

SANDER'S CHEMICAL PRODUCTS, LTD. (C.W.U.V., 24/8/40.) Reginald Dunn, F.C.A., 10 New Street, Leicester, appointed Liquidator. Claims by September 12.

Chemical and Allied Stocks and Shares

ALTHOUGH sentiment on the Stock Exchange was assisted by the R.A.F. successes, and markets showed a very firm undertone, there was again very little business outside British Government securities, which were higher on balance. Nevertheless, the majority of movements in industrial securities, although small, were in favour of holders, and shares of chemical and allied companies again reflected the surrounding tendency.

Imperial Chemical were, as usual, a relatively active feature, and improved further to 26s., but the 7 per cent. preference units at 28s. 6d. have lost part of an earlier improvement. The market is continuing to assume that there are reasonable possibilities of the dividend on the ordinary units being kept at around 8 per cent.; the interim dividend falls to be declared towards the end of next month, and the prevailing view is that it is likely to be unchanged at 3 per cent. Borax Consolidated deferred units made the higher price of 23s. 9d., while Turner and Newall, at 56s. 9d. was another share which moved in favour of holders. Elsewhere, Imperial Smelting were easier at 6s. 4d., awaiting the forthcoming decision as to the dividend on the preference shares. General Refractories were slightly better at close on 6s. Dunlop Rubber were firm at around 28s. 9d. and Reckitt & Sons ordinary moved up to 85s., while Cerebos remained firm at £71.

United Glass Bottle were higher at around 45s., but there were again few dealings in other glass shares, apart from Triplex Glass, which kept around 18s. 9d. awaiting the impending results for the past year's working. Market estimates of the dividend of the last-named company continue to vary a good deal, because of divergent views as to the extent the business has been affected by reduced demand for safety glass from the motor trade. Cooper McDougall and Robertson continued to be quoted at par; the interim dividend decision is due next month. British Glues 4s. shares transferred at 4s. 9d. and the preference shares, which last year received 10 per cent. because of their participating dividend rights, changed hands at around 25s. Among other preference shares, Monsanto Chemicals 5½ per cent., transferred at 21s. at one time, and Sanitas Trust preference at 22s. 6d. Better prices ruled for British Oxygen and British Aluminium, and dealings around par were shown in the 4 per cent. debentures of the last-named company. British Drug House ordinary shares changed hands at 20s. 6d. at one time.

Among smaller-priced shares, William Blythe 3s. ordinary were

again quoted at 5s. 6d. and business in Blythe Colour 4s. ordinary was also "marked" at this figure. Burt Boulton and Haywood were done at 7s. 6d. Elsewhere, B. Laporte were 47s. and Pinchin Johnson were a few pence higher at 15s. 7½d., but International Paint were again 62s. 6d. Lever and Unilever were firmer at 19s. and the 8 per cent. preference kept at 21s. 3d., while British Oil and Cake preferred ordinary at 31s. 10½d. were the same as a week ago. United Molasses had a firm appearance at 19s. 9d.

Movements in textile shares were small; Calico Printers were again firm, awaiting the preference dividend decision. Associated Cement were better at 55s. and Tunnel Cement remained around 25s., despite the reduced interim dividend. British Plaster Board were firm at 9s. 3d. Boots Drugs moved up to 39s., and Sangers were higher at 18s., but Timothy Whites became easier at 16s. 3d. "Shell" and other leading oil shares lost most of an earlier small rally.

Company News

The International Nickel Co., of Canada, shows a net profit for 6 months to June 30 of \$18,060,293 (U.S.), equivalent after preferred dividend requirements to \$1.17 a share on the common stock. (Last year \$17,773,438 and \$1.15).

Chemical Trade Inquiries

South Africa.—H.M. Trade Commissioner at Johannesburg reports that the South African Railways and Harbours Administration is calling for tenders (Tender No. 2811) for the supply and delivery of disinfectant fluid: 22,200 gallons in one gallon iron drums and 15,900 gallons in 5-gallon iron drums. Tenders, endorsed "Tender No. 2811 for Disinfectant Fluid," should be addressed to the Chief Stores Superintendent, South African Railways, Room 3, Park Chambers, Rissik Street, or P.O. Box 8617, Johannesburg, by whom they will be received up to 3 p.m. on Friday, October 4, 1940. Tenderers must submit to the Government Pathologist, Government Bacteriological Laboratory, Cape Town, in time to reach him before the closing date for the receipt of tenders, a sample of one gallon of the disinfectant fluid offered. (Ref. T. 21345/40.)

New Control Orders

Sulphate of Ammonia Prices

The Control of Fertilisers (No. 4) Order, 1940 (S.R. and O., 1940, No. 1474, price 1d.), which has been made by the Ministry of Supply to take effect as from August 15, 1940, specifies maximum prices for the sales of agricultural sulphate of ammonia in quantities of 2 cwt. or more. Inquiries should be addressed to the Controller of Industrial Ammonia, Ministry of Supply, 19 Berkeley Square, Bristol, 8.

Control of Plastics

The Minister of Supply has appointed Mr. A. Vyvyan Board to be Controller of Plastics. The Control is being set up to regulate the consumption of plastics which are being used in increasing quantities in connection with the armament programme. The Control will also co-ordinate the arrangements for the supplies of the principal raw materials used in these manufactures, the more important being formaldehyde, urea, phenol, cresol, cellulose acetate, nitro-cellulose and rennet casein. A further announcement will be made in due course regarding the detailed control arrangements. Mr. Board is at present the Controller of Molasses and Industrial Alcohol, which post he will continue to hold. Inquiries should be addressed to the Ministry of Supply, Plastics Control, Great Burgh, Epsom, Surrey.

DOMESTIC CHARCOAL PRODUCTION

Owing to a slight misunderstanding in the way in which the charcoal import statistics were presented to him, our Special Correspondent reports that the figures as presented in the article "Domestic Charcoal Production," published in our issue of August 10, are misleading. Those in the first group, "Decolorising and Activated Carbons," were correctly reduced from cwt. to tons and are correct; those in the second group, "Charcoal for Other Purposes" were already stated in tons, and should not have been reduced. The figures as they now appear should therefore be multiplied by 20.

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